

Serial No.: 09/924,620

Attorney Docket No.: 2001P04227US01

REMARKS

Claims 1-10, 12, 14, and 19-20 are pending.

Claims 1-10, 12, 14, 19, and 20 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In particular, the limitations in claims 1-10, 12, and 14 of "jitter buffers" was alleged to be "unclear, because the disclosed buffers are not used for any operation/reduction of jitter, but to adjust the signal rate at a different frequency." Applicant respectfully submits that use of the limitation "jitter buffers" is indeed clear, as can be seen from a reading of the Specification. As discussed in the background, a purpose of jitter buffers is to even out packet separation in systems including plural clock domains, and that to do so, it is important to minimize rate adjustments. The recited jitter buffers do so through the recited buffer swap.

In addition, the limitations in claims 4, 8, and 19 of "said second clock frequency comprising a frame clock rate" was indicated to be "unclear" because "it is not understood how a clock/frequency can comprise another clock frequency, as the frequencies which are interrelated, as being multiples of the same source frequency, do not comprise each other or the source frequency..." Applicant does not understand the basis for this rejection. The term "multiple" does not appear in Applicant's Specification. A clock frequency may comprise, for example, any clocking rate (thus the Patent Office's apparent reading of particular values into that recitation is inappropriate). The limitation in question specifies that the particular clock frequency (the second) may be of a frame clock rate. As such, the Examiner is respectfully requested to reconsider and withdraw the rejection.

Claims 1-10, 12, 14, and 19-20 have been rejected under 35 U.S.C. 103 as being unpatentable over Greenblatt, U.S. Patent No. 5,136,586 ("Greenblatt") in view of Matsumoto, U.S. Patent No. 5,812,944 ("Matsumoto"). Applicants respectfully submit that the claimed invention is not taught, suggested or implied by Greenblatt or Matsumoto, either singly or in combination.

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As discussed in the Specification, and in response to the previous Official Action, the present invention relates to a system and method for rate adjustment and jitter buffering. A rate adjustment system according to an embodiment of the invention includes a first jitter buffer pair and a second buffer pair. The buffers in the first and second jitter buffer pairs are swapped to effect a rate adjustment. In particular, the buffers in the pairs are alternately filled at a first clock rate and emptied at a second. The swapping occurs simultaneously at the second clock rate. In some embodiments, the first clock is associated with a sample clock frequency and the second clock is associated with a frame clock frequency.

Claims 1 and 19 thus each recite first and second clock domains, as well as pairs of jitter buffers that interface between the first and second clock domains, i.e., domains of different clock sources. As discussed in the Specification, one clock domain may, for example, be a local clock and the second may be from a different clock source, and even remotely derived.

In contrast, while Greenblatt provides a clock C and a clock C2, these are not from first and second domains, as recited in the claims at issue. Indeed, these are both sample clocks (the clock C samples voice V and the clock C2 samples voice V') and are derived from a single clock source and therefore single domain. The Examiner's attention is directed to FIG. 5 of Greenblatt, in which a single "high speed system clock" is divided into clocks C and C2. Because Greenblatt does not provide first and second clock domains, Greenblatt also does not provide pairs of jitter buffers that interface between such domains.

Matsumoto is relied on for allegedly teaching a bi-directional wireless system. However, Matsumoto does not teach, suggest, or imply, that pairs of jitter buffers interfacing across different clock domains can be alternated, as generally recited in the claims at issue. As such, the Examiner is respectfully requested to reconsider and withdraw the rejection.

The remaining claims recite, in claim 5, "wherein said first or second jitter buffers alternately fill at a first clock frequency and empty at a second clock frequency, wherein alternation between said first and second jitter buffers occurs at said second clock frequency; wherein said third or fourth jitter buffers alternately fill at said second clock

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frequency and empty at said first clock frequency, wherein alternation between said third and fourth jitter buffers occurs simultaneously with said alternation between said first and second jitter buffers at said second clock frequency, said first clock frequency associated with a sample clock, said second clock frequency associated with a frame clock;" in claim 12, "switching between using said first or second jitter buffers at said second clock rate; and switching between using said third or fourth jitter buffers simultaneously with said switching between using said first or second jitter buffers at said second clock rate, said first clock rate being associated with a sample clock, said second clock rate being associated with a frame clock;" and in claim 14, "receiving at first or second jitter buffers a plurality of samples at a first clock rate and transmitting a block of said samples at a second clock rate; and switching between using said first or second jitter buffers at said second clock rate;

receiving at third or fourth jitter buffers blocks of samples at said second clock rate and transmitting a plurality of samples at said first clock rate; and

switching between using said third or fourth jitter buffers simultaneously with said switching between using said first or second jitter buffers at said second clock rate, said first clock rate being a sample clock rate, said second clock rate being a frame clock rate."

In contrast, Greenblatt uses "a pair of buffer memory devices A and B to controlled by appropriate software to alternate the buffers at each frame interval, clock C acting on analog-to-digital converter A-D to digitally sample the voice input and faster rate clock C2 controlling digital to analog converter D-A that restores and plays back the analog voice V' at the output." Col. 3, lines 6-13.

What Greenblatt calls a "frame interval" T does not appear to be defined by a frame clock, as recited in the claims at issue; instead, the time T appears to be defined by the sample clock C, the same as the V sample clock. (Also, applicant notes that this is not the V' clock C2 as stated in the Official Action – it is C. (This can be seen in FIG. 1, where voice V is sampled during time T at clock C, whereas voice V', less than time T, is played back at clock C2)). Thus, Greenblatt does not provide a first clock rate being a sample clock rate and a second clock rate being a frame clock rate, as recited in the claims at issue. Instead, in Greenblatt, both these clocks are based on sample

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clocks.


Matsumoto is relied on for allegedly teaching a bi-directional wireless system. However, Matsumoto does not teach, suggest, or imply, pairs of jitter buffers interfacing across different clocks can be alternated, as generally recited in the claims at issue. As such, the Examiner is respectfully requested to reconsider and withdraw the rejection.

For all of the above reasons, Applicants respectfully submit that the application is in condition for allowance, which allowance is earnestly solicited.

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Respectfully submitted,



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